

We claim:

1. A method for automatic and dynamic configuration of an address allocation mechanism in a computer network, the computer network comprising one or more sub-networks and at least one router, each sub-network comprising one or more devices, the address allocation mechanism allocating network addresses to the devices, the method comprising:

5           obtaining routing protocol messages, the routing protocol messages being exchanged in the computer network for routing purposes;

10          obtaining one or more network prefix addresses that correspond to the sub-networks, the network prefix addresses being obtained using the routing protocol messages; and

15          determining a range of valid network addresses for the devices using the network prefix addresses.

2. The method as recited in claim 1 wherein the method further comprises automatically allocating the valid network addresses 20 to the devices requesting allocation of the valid network addresses.

3. The method as recited in claim 1 wherein the method further comprises continuously performing monitoring of the routing protocol messages, the monitoring being performed to check if there is 25 a change in addressing configuration of the computer network.

4. The method as recited in claim 3 wherein the method further comprises updating the address allocation mechanism with the changed addressing configuration.

30          5. The method as recited in claim 1 wherein obtaining the routing protocol messages comprises listening to the routing protocol

messages at one or more sub-networks to which the address allocation mechanism is connected.

6. The method as recited in claim 1 wherein obtaining one or  
5 more network prefix addresses comprises determining network prefix  
addresses of one or more sub-networks to which the address allocation  
mechanism is connected.

7. The method as recited in claim 1 wherein determining the  
10 range of valid network addresses comprises identifying valid network  
addresses from a set of available network addresses at the address  
allocation mechanism, the valid network addresses having the same  
network prefix address as the obtained network prefix address  
corresponding to one of the devices.

15 8. The method as recited in claim 1 wherein determining  
range of valid network addresses for the devices comprises:

- a. choosing a random number of a suitable length, the  
suitable length being determined using length of the network  
20 prefix address;
- b. concatenating the random number with the network  
prefix address to form a valid network address;
- c. checking whether the valid network address is  
allocated to any other of the devices in the network; and
- d. repeating the steps a-b, if the valid network address  
25 is allocated to any other of the devices in the network.

30 9. The method as recited in claim 8 wherein checking of a  
valid network address is performed using an Address Resolution  
Protocol (ARP).

10. The method as recited in claim 1 wherein the method automatically and dynamically configures the address allocation mechanisms for the at least one router.

5           11. A computer program product for use with a computer, the computer program product comprising a computer usable medium having a computer readable program code embodied therein for automatic and dynamic configuration of an address allocation mechanism in a computer network, the computer network comprising 10 one or more sub-networks and at least one router, each sub-network comprising one or more devices, the address allocation mechanism allocating addresses to the devices, the computer program code performing:

15                 obtaining routing protocol messages, the routing protocol messages being exchanged in the computer network for routing purposes;

               obtaining one or more network prefix addresses corresponding to the devices, the network prefix addresses being obtained using the routing protocol messages; and

20                 determining range of valid addresses for the devices using the network prefix addresses.

25           12. The computer program product as recited in claim 11 wherein the computer program product further comprises a computer program code for automatically allocating the valid network addresses to the devices requesting allocation of the valid network addresses.

30           13. The computer program product as recited in claim 11 wherein the computer program product further comprises a computer program code for continuously performing monitoring of the routing protocol messages, the monitoring being performed to check if there is a change in addressing configuration of the computer network.

14. The computer program product as recited in claim 13 wherein the computer program product further comprises a computer program code for updating the address allocation mechanism with the changed addressing configuration.

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15. The computer program product as recited in claim 11 wherein the computer program code for determining range of valid addresses comprises a computer program code for identifying valid addresses from a set of available IPv4 addresses at the address allocation mechanism, the valid addresses having the same network prefix address as the obtained network prefix address of the devices.

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16. The computer program product as recited in claim 11 wherein the computer program code for determining range of valid network addresses comprises a computer program code for:

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- a. choosing a random number of a suitable length, the suitable length being determined using length of the network prefix address;
- b. concatenating the random number with the network prefix address to form a valid network address;
- c. checking whether the valid network address is allocated to any other host device in the network; and
- d. repeating the steps a-b, if the valid network address is allocated to any other of the devices in the network.

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17. A system suitable for automatic and dynamic configuration of an address allocation mechanism in a computer network, the computer network comprising one or more sub-networks and at least one router, each sub-network comprising one or more devices, the address allocation mechanism allocating network addresses to the devices, the system comprising:

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- a. an intercepting module wherein the intercepting module obtains routing protocol messages, the routing protocol messages being exchanged in the computer network for routing purposes;
- 5 b. a first configuration module coupled to the intercepting module wherein the first configuration module obtains one or more network prefix addresses corresponding to specific sub-networks using the routing protocol messages; and
- 10 c. a second configuration module coupled to the first configuration module wherein the second configuration module determines range of valid network addresses for the devices using the network prefix addresses.

18. The system as recited in claim 17 wherein the system further comprises a monitoring module wherein the monitoring module updates the address allocation mechanism with any changes in addressing configuration of the computer network.

19. The system as recited in claim 17 wherein the address allocation mechanism is a DHCP server.

20. The system as recited in claim 17 wherein the address allocation mechanism is built into routing protocol in the computer network.

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21. The system as recited in claim 17 wherein the address allocation mechanism is built into each of the devices in the computer network.

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22. The system as recited in claim 17 wherein the address allocation mechanism allocates IPv4 addresses to routers.